The Safety Management System

Our Army no longer has the single threat that it defended against throughout the Cold War. Today our Army is at war on multiple fronts. Today there are more than 500,000 soldiers deployed away from home station conducting operations in more than 70 countries. Peacekeeping operations are ongoing in Iraq, Afghanistan, and in the Balkans. The Army has done this while undertaking Army Transformation, one of the most comprehensive reorganizations in its history. Throughout this tumultuous period, the Army maintained trained and combat ready units while still focused on the morale and welfare of soldiers and their families.

Transformation is a phased approach to evolving our Army to a force that is more adaptable and capable of meeting the challenges of the 21st Century. It consists of changes in equipment, force structure and tactics. These changes are significant and, like any change, require that our soldiers adapt. Each of these changes affords new and unrealized opportunities for accidents to occur.

As the Army adapts to these changes, so too must its Safety program. Maintaining the ability to execute the many and varied missions our nation demands of its Army requires protecting the force through composite risk management at all times and in all environments. Although the Army has made tremendous progress in safety, unnecessary losses still take a significant toll on our precious resources, most importantly, our people. No commander wants to lose, or injure, a soldier or civilian in an accident or other preventable loss. However, current statistics indicate that more than 50 percent of our battalion commanders, two thirds of brigade commanders and every garrison commander can expect to suffer the accidental death of someone in their command. These numbers are unacceptable to Secretary of Defense, Donald Rumsfeld. He set goals for the Army to reduce accidents by 50% by the end of FY05 and 75% by FY08. To achieve this goal, the Army has integrated composite risk management into all of its processes.

Composite Risk Management and Accident Prevention

For almost ten years the US Army has focused on risk management as its primary tool to manage the balance between mission success and controlling hazards. Today this process has matured into composite risk management. Composite risk management gives leaders the tools to consistently meet the challenges of the peacetime Army and of our Army at war. The following five steps define composite risk management:

1. Identify Hazards
2. Assess Risk
3. Develop Controls and Make Decisions
4. Implement Controls
5. Supervise, Evaluate, and Sustain

Composite risk management is by nature an operational tool. It focuses on leader decision making during the planning and execution of our operations. Though applicable in managing hazards associated with day-to-day routine tasks, composite risk management is most effective as a leader accident and loss prevention tool when applied to the dynamics of Army operations. Integrating traditional risk management into our operations has been effective in reducing the frequency and severity of accidents in the Army. Composite risk management seeks to improve upon this by further integrating risk management concepts into all aspects of our operations as an all encompassing loss prevention tool.

Composite risk management alone cannot achieve the goals put forth by Secretary Rumsfeld. To meet the challenge we need to place relevant mission oriented risk management and safety management tools into the hands of our commanders and safety professionals. Over the course of the past couple of years the Combat Readiness Center has made significant progress in providing risk management and safety management tools to the field. That being said, the current set of tools and our levels integration of risk management have still left us short of our goals. Our goals can only be accomplished if we step out of the box and objectively assess the programs we currently have in place. As the Army transforms to the future force, so too must our safety and loss prevention processes transform into composite risk management based safety and loss prevention programs. Our transformation begins with assessing the foundations upon which we say losses occur and how that integrates with the basic business processes of the Army. The following details the analysis processes and models that define the foundation framework for the composite risk management based Safety Management System.

Understanding Accident Causation

The current accident causation model is based on the systems approach to accident causation. This systems approach is the application of the General Systems Theory to explain how organizations operate. This approach views an organization as a group of interrelated parts brought together for a common purpose. Business process analysis is focused on developing a common model and to present it in a matter that management can understand. This model depicts a system's parts as defined below:

Part	Description
Environment	The setting in which a system exists; it gives inputs to the system, uses its outputs, and imposes constraints. The environment has two facets: External environment: Outside influences such as higher headquarters, society, or economic system. Task environment: A subset of the larger environment – the internal setting, such as working conditions.
Input	Energy that flows from the environment to the system: ▪ Demands from customers or outsiders. ▪ Information, including feedback. ▪ Resources enabling the system to produce outputs.
Conversion	Processes to transform inputs into outputs.
Output	Products resulting from inputs and conversion.
Feedback	Timely information needed to ▪ Respond to the environment's demands. ▪ Adjust conversion processes. ▪ Maintain equilibrium. ▪ Produce desired outputs.

The Army has evolved the General Systems Theory Model into the Systems Management Model shown below. This Systems Management Model is the base model used in the Systems Approach to Accident Causation. This model does not fully comply with the General Systems Theory though. In the General Systems Theory, environment is defined as the setting in which a system exists; it gives inputs to the system, uses its outputs, and imposes constraints. In the Systems Management Model, environment is contained within the conversion part of the process. Environment should be viewed as a demographic element (see "Measuring Demographics below). In this model it is measured as a process resource. This fundamental variation impacts on the applicability of some of the metrics being used to measure accident causation.

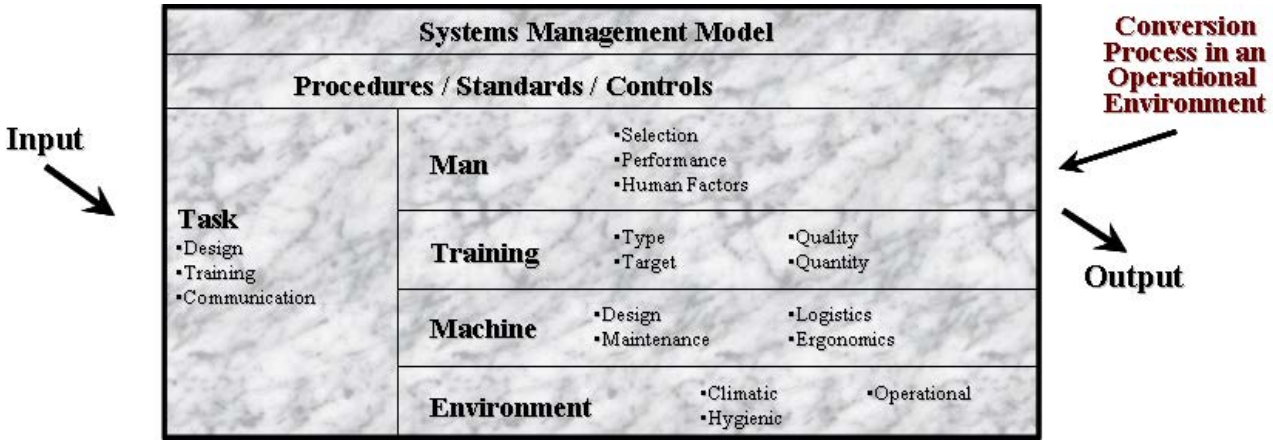

Figure 1 - Systems Management Model

Business Systems

The General Systems Theory and the standard Systems Management Model may be further evolved into the Business Systems Model. Like the Systems Management Model the Business Systems Model is comprised of a collection of resources and activities that define the organization's primary business and mission as well as to basic operations and resources required to support the organization's infrastructure.

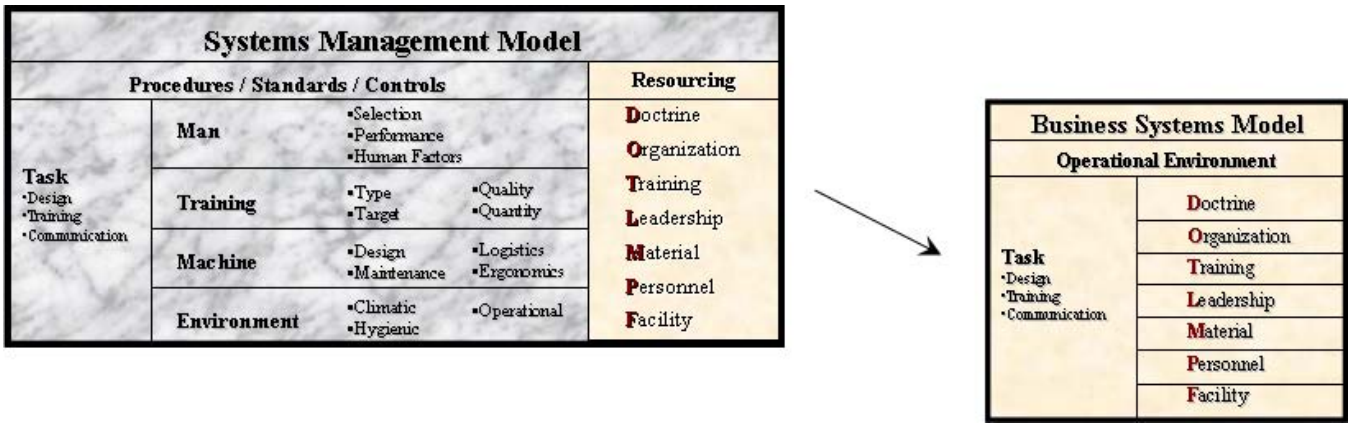

Figure 2 - Transition to Business Systems Model

Business System Resources

All business systems are composed of basic resource elements. These elements are common to all businesses regardless of the type of industry. These resources are used in the day to day management of the organization as well as the execution of the organization's mission. An efficient organization expends only enough resources to adequately accomplish the mission. Over resourcing reduces the organizations efficiency and profitability. Under resourcing as a minimum over extends the boundaries of the resources and at worse causes losses such as damaged products, sub-standard products, or losses to one or more organizational resources. Finding an efficient balance in the utilization of these resources is critical to the success of the organization.

The Business Systems Model contains seven resource elements. These resources are represented by the acronym DOTLMPF. The acronym DOTLMPF is used to represent the collection of resource elements that make up the organization. These are:

- **Doctrine** – Doctrine is defined as the collection of rules, laws, organizational guideline, and corporate governances that provide the standards by which the business system operates
- **Organization** – Organization is defined as the structure and manning guidelines that specify the hierarchal structure of the business system. The corporate organizational structure is critical to all business categories. It provides the foundation for all reports and establishes the scope of the enterprise itself. It may be organized according corporate structure, geographic location, sales region, or any other logical representation of the enterprise. The structure defines how the corporate views itself and how the enterprise will represent itself. From a mission point of view, organization represents the right individual with the proper knowledge and supervision to execute the mission.
- **Training** – Training is defined as the instructional guidance provided to leaders and employees necessary for the safe and efficient execution of the organization's mission.
- **Leadership** – Leadership begins with first line supervisors and includes all intermediate levels through the corporate executive leadership. It represents those personnel that provide guidance

at all levels to employees for the safe and efficient execution of the mission. Leadership is not attached to individuals but instead is attached to positions within the organizational structure.

- **Material** – Material represents equipment and materials necessary for the successful completion of the organization's mission. This includes consumables, production equipment, and durables, but does not include any real property such as buildings and facilities. Material elements are divided into those elements used directly in the execution of the organizations mission and those used to support the enterprise infrastructure. Raw materials used in the production process are considered missions material resources. Enterprise resources used to support the infrastructure would include machines used in the manufacturing process, vehicles used in logistical support, or equipment used to support service based industries. Business category templates may be developed to define the types of materials needed by different types of industries. The use of the material / equipment within the enterprise is defined by the business category template.
- **Personnel** – Personnel includes employees at all levels from intern through corporate executive. On the mission side, it includes the customer base. The Personnel Resource Domain represents information associated with an organizations employee base and may be used as a reference source for Employee management events such as training, awards, etc. When used with employee based event domains, historic records of personnel actions are associated with each individual employee. Its metrics focus on the issues directly related to the sustainment of the personal condition.
- **Facility** – Facilities represent those real property elements such as buildings and land used to support the organizations mission at all levels. It does not usually include properties used solely for investment purposes. Real property entities are used as a reference source to manage things such as facility maintenance, inspections, etc. Like personnel resources, real property resources may be used to associate an historical record base for the management of the real property.

The Business Systems Model places these resources in the conversion portion of the Systems Management Model. The DOTLMPF resources are used to transform input into output. The Business Systems Model also follows the General Systems Theory Model more closely in that environment is removed from the conversion process. Instead the conversion process takes place within the operational environment. The figure below shows the Business Systems Model.

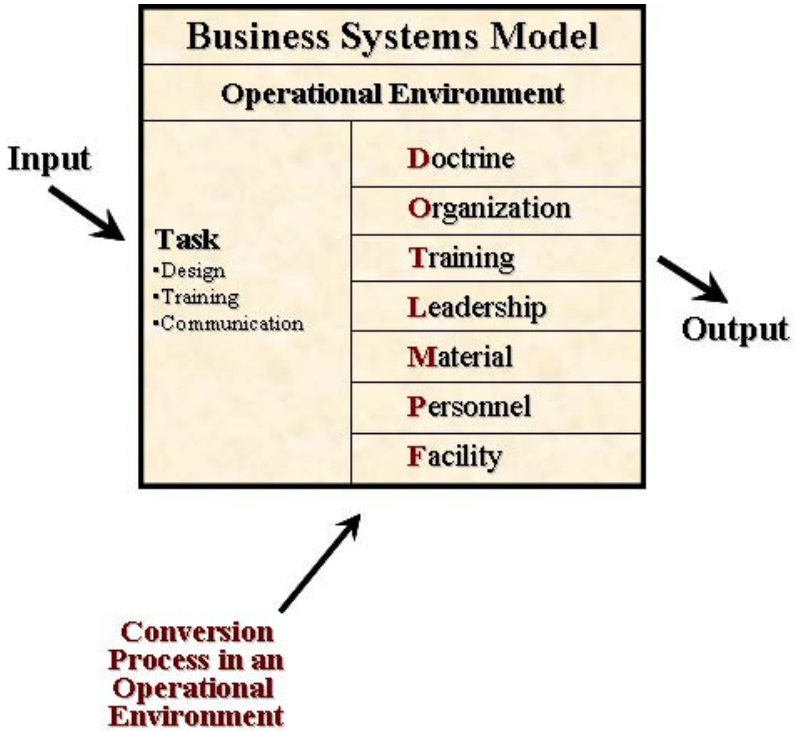

Figure 3 - Business Systems Model

Deficiencies

A deficiency exists when the DOTLMPF resource elements of a task are under resourced or improperly resourced. Composite risk management tools to manage these deficiencies can also be designed into the business model. The standard Business Systems Model with integrated composite risk management processes is depicted below. The model shows the Business Systems Model on the left. A five or six step composite risk management model is depicted in the center of the diagram below. The composite risk management model looks for DOTLMPF deficiencies during the identification and assessment steps. Deficiencies are then resourced as controls and abatements.

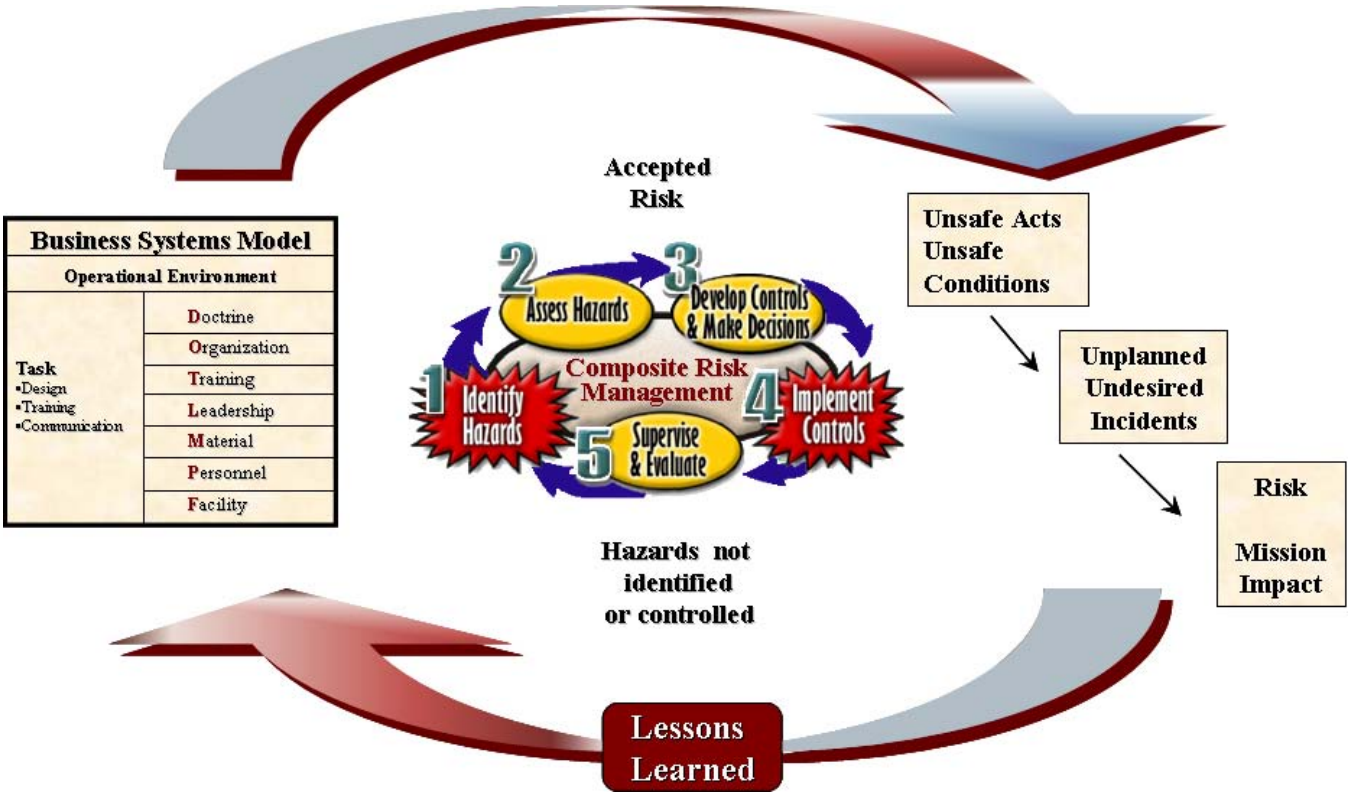

Figure 4 - Accident Causation Lifecycle

A logical decision process can be executed that corrects the original deficits. For example an improper resourcing in the Material resource element (such as a piece of manufacturing equipment) will of course include resourcing of Materials as a control. It may also include training on the new material / equipment as well as procedural doctrine changes covering the material's / equipment's use. The right side of the model depicts unwanted outcomes from accepted risk or unknown hazards. Finally the model depicts the cyclic nature of the process. Metrics such as those used in Six Sigma may be gathered throughout each phase of the process. These are then fed back into the Business Systems Model to improve the efficiency of the task.

Many deficiencies may be representative of inefficient processes or procedures. Sometimes a deficiency may represent the risk of a loss to an organization. The loss may represent money, equipment, personnel, or any other type of DOTLMPF resource. When the under resourcing or inappropriate resourcing of a deficiency contributes to the severity or probability of a loss then the deficiency is considered to be a hazard.

Relevant Lessons Learned

Understanding the cause of an accident does little to prevent future occurrences of similar events unless action is taken to apply lessons learned. For lessons learned to be affective they must address the specific mission and task where the original hazards existed. The key factor to getting Commanders involved in applying these lessons learned is to make the information relevant to those missions and tasks. A commander will use a tool that can provide direct and

measurable controls as they apply to a specific mission. The tool will be most affective when it is integrated as part of a comprehensive Composite Risk Management loss prevention activity.

Making Metrics Relevant

The key to making lessons learned relevant is the identification of those information elements that generate relevant metrics. The first step to identifying metrics that are relevant and useful in the loss prevention role is to identify those elements that best measure relevant performance and deficiencies. The accident investigation process provides basic *Who, What, Where, When, How,* and *Why* information. Key to making this information useful is an understanding of what can be derived from this process and how it applies to lessons learned. *Who, what, where,* and *when* provides basic accident demographics. *"How"* is measured using DOTLMPF deficiencies as described above and *"Why"* is measured using human factor analysis (HFACS).

Measuring Demographics

Demographics are represented by *who, what, where,* and *when.* The main purpose of demographics is to identify the at risk population. A population may be defined by age, gender, and pay grade. It may also be defined by duty position and work location. Any set of *who, what, where,* and *when* that can identify a specific working population may be used. This population is then measured against a standard set of metrics. Identification of mission parameters is critical to defining the elements that make up relevant metrics to measure at risk populations. Demographic metrics then seek out commonalities and accident trends to determine what population is most vulnerable to a reoccurrence of the mishap. Below are examples of information sets that may be used to measure demographic metrics.

- Who – gender, age, rank, duty position, etc.
- What – equipment, activities, mission tasks, etc.
- Where – operational environment, type location, theater of operations, etc.
- When – period of day, season, etc.

How – Conditions Allowing a Hazard

As previously mentioned, a deficiency exists when the DOTLMPF resource elements of a task are under resourced or improperly resourced. This deficiency is considered to be a hazard when it increases the probability or severity of a loss. DOTLMPF deficiencies define conditions allowing a hazard to exist. For example, how did the hazardous condition come into existence or how did the resource deficiency impact the probability or severity of a loss? Hazards can then be measured as DOTLMPF deficiencies and controls measured as applied DOTLMPF resources. These hazards are defined below:

- **Doctrine** – Standards do not exist or they are not clear and practical
- **Organization** – Inadequate personnel or services to complete the mission
- **Training** – Standards exist but they are not known or ways to achieve them are not known
- **Leader** – Standards are known but are not enforced
- **Material** – Inadequate material or design of material inadequate for the mission
- **Personnel** – Standards not followed by soldier
- **Facility** – Inadequate facility maintenance or facility design inadequate for operation

Why – Human Factors that Lead to DOTLMPF Deficiencies

DOTLMPF deficiencies measure condition or state but they do not define why a condition exists. Understanding why a DOTLMPF deficiency exists is critical to identifying abatements and controls to the root cause of a problem. Human Factor elements (HFACS) are used to define why resource deficiencies exist. Without understanding why these deficiencies exist, controls could be developed that address superficial elements and not the fundamental root cause of the deficiency. This is most common the case when dealing with systemic deficiencies. Like DOTLMPF resource deficiencies, HFACS may be grouped and quantified to develop metrics and trend analysis capabilities. Below are examples of these types of groupings.

- Leader – risk accepted based on CRM, risk disregarded, OPTEMPO, establishes false sense of urgency, etc.
- Training – leader or individual unaware of hazard or risk, training received on task did not meet standard, etc.
- Standard – standard inadequately addresses dynamics of risk, standard does not account for hazard or risk, etc.
- Individual – related values not relevant to individual, member of at risk demographics, behavioral performance issues, etc.

Defining the Process

The metrics identified above define a process by which relevant lesson learned can be derived. The lessons learned are directly applicable to an organization's missions and associated sub-missions. These lessons learned can then be combined with automated composite risk management tools to provide relevant answers in the form of at risk populations, resourcing requirements, human factor issues, and most importantly affective abatements and controls to prevent losses. This includes combat losses as well as losses to accidents. When coupled with other systems such as SRS, unit specific recommendations can be provided to also address issues directly associated with that organization. The diagram below describes the process in sequence.

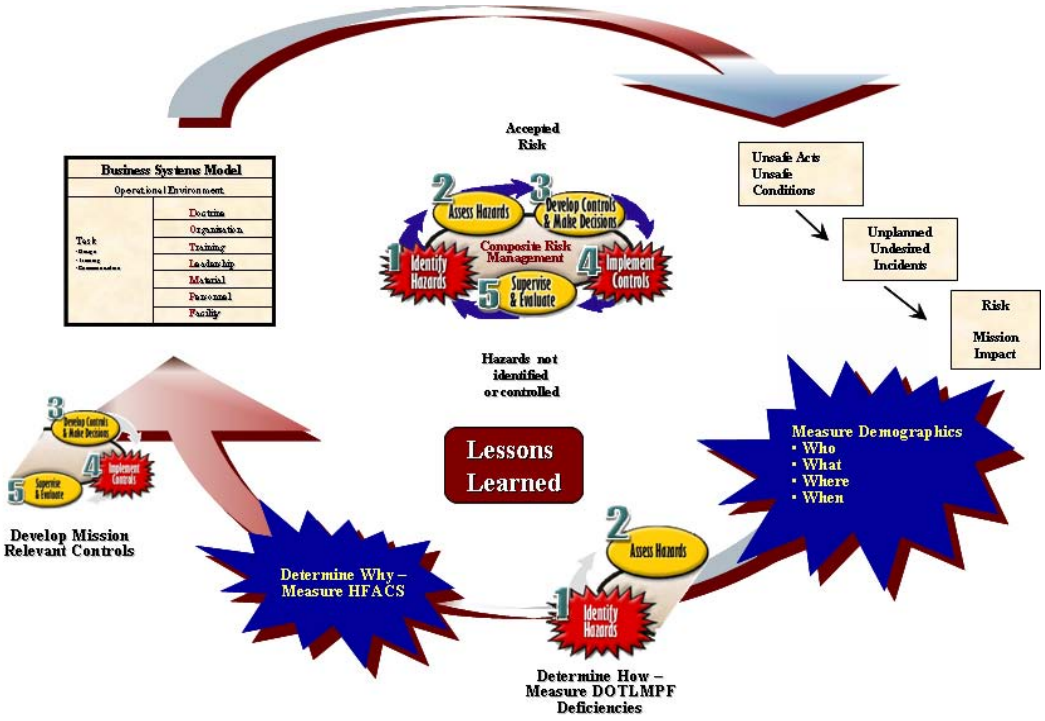

Figure 5 - Making Lessons Learned Relevant

Implementing Composite Risk Management Based Safety Programs

In a traditional safety program, safety managers respond to compliance requirements and use checklists to guide their activities. In a composite risk management based safety program, leaders and safety managers focus on facilitating the integration composite risk management into the workplace at all levels. In a composite risk management based safety program the requirements of safety compliance do not go away, but these requirements are no longer driven by fiscal and regulatory requirements. Compliance requirements revert back to their original intentions and are implemented as the fifth step of the Composite risk management Process.

There are other obstacles to developing a composite risk management based safety program and achieving accident reduction goals. Most of these obstacles involve the failure to adequately implement the leadership and / or the soldier elements of DOTLMPF. Some of these obstacles are:

- No consequences for improper actions – soldiers and leaders not held accountable for their actions.
- Programs and doctrine exist more as a patchwork collection of processes and policies instead of an integrated system.
- Many corrective actions and controls are short-term fixes. Few are long term sustained controls.
- Not all leaders believe in the importance of many safety programs.
- Corrective recommendations are based solely on accident findings not on an analysis of the soldiers' work environment.
- Simple risk assessments are completed and risks accepted without attempt to control hazards.

Secretary Rumsfeld has set challenging accident reduction goals for the Army. As the Army transforms it is even more important to implement effective safety programs and process based on composite risk management. Safety managers play a key role in assisting leaders in this endeavor. Safety managers must:

- Provide safety training resources
- Proactively assist leaders in the identification of hazards
- Analyze hazards to identify their root causes
- Assist in the development of controls
- Promote a behavior based safety focus
- Perform the majority of the follow-up and evaluation of control implementation

Using this approach, the workforce becomes aware of safety concerns and all personnel work to eliminate hazards in the workplace. It is important to understand that the safety manager is not the executor of all of these processes but instead acts as a facilitator in integrating these processes throughout the organization. The safety manager oversees these processes to insure they are functioning in the organization.

The complexity and volumes of information associated with these tasks is further intensified by the fact we are an Army at war that is in the midst of the most comprehensive transformation in its recent history. The amounts of information and support requirements for a successful composite risk management based safety program can become overwhelming. Leaders and safety managers require information management tools and resources to assist them in this challenge. Leaders and safety managers need an information strategy that is extendible, flexible, and adaptable to empower them with the abilities to effect this reduction in accidents. This information empowerment strategy must be totally integrated. The Safety Management System is a strategy that has been developed to meet this challenge. To be successful, this information empowerment strategy must focus on supporting the tactical mission of the Army and reflect the dynamics associated with it through war time operations and through transformation.

The Safety Management System

The Safety Management System is not a single all encompassing tool or resource. It is a loss prevention and safety management framework designed as a long term comprehensive program to meet accident reduction goals. It is also designed to sustain these goals through war time operations, transformation, and the unforeseen dynamics of the Army. The framework of the Safety Management System is based on the accident causation and loss prevention processes

described above and is implemented as a composite risk management based loss prevention and safety program management set of tools and resources.

The composite risk management process, when effectively applied, eliminates all risks except those accepted by a commander and will ultimately reduce accidents and injuries. The goal of the Safety Management System is to provide leaders and safety managers with information resources, administrative tools, and data analysis tools that integrate and promote this process. The Safety Management System provides tools down to the lowest level safety office that is practical to support. The plan includes a framework that is open-systems oriented, scaleable to meet increasing technology demands, and capable of integrating a range of legacy systems and different sources of data. In addition, the plan includes the ability to provide information to different types of customers accurately and when they need it in a resource-constrained environment.

The Combat Readiness Center provides safety and loss prevention resources via its two Web sites: http://crc.army.mil and http://rmis.army.mil (RMIS Web site). In addition to information resources, users of the RMIS Web site may also retrieve historical accident data at the DA level to be used for reporting and some limited analysis. Though this capability has come a long way, it still falls short of providing decision support capabilities to unit commanders. More importantly, this data repository only contains information pertaining to accidents. It does not contain proactive types of information that may also be used to prevent future accidents.

The Combat Readiness Center has limited loss prevention and safety management tools that focus on the safety and composite risk management needs of field organizations. Below the Combat Readiness Center, most information management tools are still paper based. For loss prevention and safety management tools to be effective in preventing accidents down to organizational levels several key capabilities are needed. These capabilities should include the following:

1. Unified Hazard Tracking System
2. Administrative Assistance for Compliancy Requirements
3. Analysis and Decision Support
4. Safety Information Resources and Reference Materials
5. Computer based training tools

Unified Hazard Tracking System

The information properties of a hazard involve the relationship of DOTLMPF elements within an operational environment. Understanding this relationship is important to understanding how to recognize hazards. A hazard is identified through hazard-identifying events. Below is a list of some of these hazard-identifying events.

- Accident Investigation
- Aviation Resource Management Survey (ARMS)
- Safety Inspections
- Observation of an Unsafe or Unhealthful Working Condition
- Operational Hazard Report
- Safety Councils

All hazards should be treated the same regardless of the process of identifying the hazard. In this way hazards can be managed collectively and eliminated based on their severity not on the visibility of the event that led to their identification.

Currently hazard information is stored in separate files. Each of the following information resources are filed separately with their own specific disposition requirements:

- Ground accident data
- Aviation accident data
- Internal safety inspections
- External safety inspections
- Occupational Hazard Reports
- Reports of Unsafe Working Conditions
- Safety Council files.

Because of the volumes of information, seldom are hazards and findings in these files systems cross-referenced with each other to identify trends and root causes. Safety managers and leaders need a central repository to catalog, prioritize, and manage hazards and their abatement plans. The Safety Management System addresses this requirement through the use of a unified hazard tracking system. The system is capable of quantifying systemic inadequacies, quantifying recommendation types, and tracking the statuses of controls and abatement plans.

Administrative Assistance for Compliancy Requirements

Too often, safety managers spend their time in record keeping and other administrative requirements driven by regulatory compliance requirements. Records are maintained for:

- Safety training
- Safety inspections
- Hazard observations
- Safety award programs
- Accident investigations.

At the installation and organizational level, safety managers need tools to assist in the reduction of this administrative burden. The Safety Management System addresses this requirement with a suite of tools designed to simplify and streamline the administrative record keeping and reporting requirement. As an added benefit, normal record keeping and reporting requirements contribute to the information repository that is used for analysis of trends and for decision support. This integrated design provides the incredibly powerful capabilities described below with increase to the management process workload.

Analysis and Decision Support

Accident investigations, safety inspections, and other similar events generate large amounts of complex data. Safety manager's and leaders are currently very limited in the resources available to assist in the analysis of this information. We currently only have this capability at DA level. Often, analysis results and recommendations are too generic to apply across the force under its various operation and environmental conditions.

Analysis and decision support capabilities are part of the fundamental design of the Safety Management System. Unlike many DA level findings and recommendations, these analysis and decision support capabilities focus on those issues directly associated with the specifics of an organization as they affect its mission and its personnel.

Safety Information Resources and Reference Materials

Safety managers and leaders are in desperate need of safety reference materials in the form of *How-to-Guides,* SOPs, lesson plans, safety promotional materials, and safety regulatory guidance publications. In the past, safety managers have shared these resources with each other without a central program in place to support the requirement. One of the problems this methodology poses is the distribution of incorrect information. The Army community needs a centrally managed program that reviews and validates resource content thereby establishing an information resource standard. These information resources should be made available through the Web and, because of the volumes of information, distributed on CDs or DVDs. The information on the Web should be updated as often as there are changes and the CDs / DVDs should be distributed periodically (e.g. semi-annually or annually).

Training Tools

The Army community needs consistent, high quality safety training. We repeatedly have accidents that occur because an individual or leader was unaware of known hazards that associated with a task or they were unaware of the proper safety precautions necessary to complete the task safely. Locally trained safety topics are often marginal in quality. To compound this, attendance is this training is often week. The reality of the Army's draw down and its wartime deployments mean we are doing more with less. The Combat Readiness Center has recognized this and has provided high quality standardized computer based safety training modules. Additionally, the Center has begun developing standardized exportable training packages that will supplement and build upon these training modules.

The Safety Management System – Current Implementation

In the fall of 2003 Eighth US Army began initial development of a suite of tools to support the functional requirements of the Safety Management System. A preliminary beta release of the suite of tools was begun in January 2005. The initial release of the Safety Management System is scheduled for January 2006. The following sections describe the contents and capabilities of this initial release.

How to Guides

The Army Safety Program has no *How-to-Guides.* While there are FMs for most other aspects of Army operations, there are none related to safety management. With the exception of Aviation, there are no school-trained unit level safety officers in the Army. Without formal training, additional duty safety officers need the *How-to-Manuals* to provide guidance on the process of managing safety. Safety Manager Guides provide reference tools to identify and control hazards. Every organization has unique safety requirements and all have similar reoccurring safety requirements. Safety Manager Guides consist of a multi-volume collection of "how-to" manuals, guides, and tools to manage a safety program. These guides are targeted for non-school trained safety technicians. Below is the framework for the Safety Manager's Guides. The Safety Manager's Guides consists of four sets of references: *The Safety Manager's Guide to Safety Management; The Safety Manager's Guide to Hazard Identification and Tracking; The Safety Manager's Guide to Systemic Trend Analysis;* and *The Safety Manager's Guide to Control Implementation*.

The Safety Manager's Guide to Safety Management – Continuity Guides

The Safety Manager's Guide to Safety Management provides the basic direction for managing an organization's safety program. The guide provides general "how-to" guidance covering all aspects of the safety program. Specific guidance is provided on the duties and responsibilities of a Safety Manager, the implementation of the Safety Management Model, and the safety manager's role in the composite risk management process. Also included are *Safety Continuity Guides* covering general safety, fire safety, FOD prevention, respiratory protection, explosive safety, and other safety related programs.

The Safety Manager's Guide to Hazard Identification and Tracking

Two separate volumes make up the *Safety Manger's Guide to Hazard Identification and Tracking.* Volume 1 is the *Accident Investigation and Reporting Procedures Handbook* and Volume 2 is the *Guide to Hazard Assessments and Safety Inspections*. The purpose of these guides is to give Safety Managers step-by-step instruction in the processes of identifying hazards.

The Safety Managers Guide to Safety Profiling and Analysis

Two separate volumes make up the *Safety Manager's Guide to Safety Profiling and Analysis.* Volume 1 is the *Guide to Profiling and Analyzing Safety Systemic Trends* and Volume 2 is the *Guide to Job Safety Analysis*. The purpose of these volumes is to give Safety Manager's step-by-step instruction in the processes of analyzing the cause of hazards and developing controls.

The Safety Manager's Guide to Control Implementation and Safety Compliance

When implementing controls, safety managers should address each of the five separate control mechanisms. The purpose of the *Safety Manger's Guide to Control Implementation and Safety Compliance* is to give Safety Manager's step-by-step instruction in the processes of controlling hazards. The *Safety Manger's Guide to Control Implementation and Safety Compliance* consists of five separate volumes. Volume 1 is *Developing and Maintaining a Safety Plan (SOP).* Volume 2 is *Managing and Developing Safety Training*. Volume 3 is *Managing and Developing Safety Leadership Tools and Training*. Volume 4 is *Managing and Developing Individual Safety Awareness Programs*. Volume 5 is *Safety Controls Through Engineering*.

The upcoming release of the Safety Management System contains the *Accident Investigation and Reporting Procedures Handbook.* This guide is the most comprehensive accident investigation guide available in the Army today. No other

publication within the Department of Defense provides a more detailed and comprehensive handbook to assist in the process of accident investigation.

Also contained in this release of the Safety Management System is an early draft of the *Safety Manger's Guide to Hazard Identification and Tracking* and continuity guides that make up the *Safety Manager's Guide to Safety Management.* When completed, the *Safety Manger's Guide to Hazard Identification and Tracking* will provide detailed *how-to* guidance on the process of identifying hazards through inspections, observations, and employee reporting. The guide will also provide guidance on managing a unified hazard tracking repository. Likewise when completed, the *Safety Manager's Guide to Safety Management* will provide a framework of continuity guides that can be used to establish and manage a safety program at any level of command.

Safety Information Resources

In addition to the Tactical Safety Manager, this release of the Safety Management System contains over 14,000 safety related resource files covering training, standards, reference materials, and safety awareness resources. All elements of DOTLMPF as they apply to safety are covered with the information resources contained in this release of the Safety Management System. Development of these resources continues. In addition to developing traditional safety training programs, the near term focus will be the automation of training files into computer based training applications. These computer based training packages can be placed on older computers scheduled for disposal. These computers can be placed in motorpools or aircraft maintenance areas for access by soldiers. Soldiers can view the training as their work schedules permit to more effectively make use of their time. Focus will also be placed on developing more effective behavior based safety resources.

Figure 6 - Safety Management System Resources

Tactical Safety Manager

The Tactical Safety Manager (TacSafe) is a software product that consists of a series of stand-alone applets that assist in three primary aspects of safety program management: Hazard Identification and Tracking, Safety Program Management, and Hazard and Mishap Trend Analysis. TacSafe is designed to be used at all levels of command from battalion through Eighth US Army. It is designed to adapt to changes resulting from Army Transformation initiatives and is also designed to meet the safety management needs of the Army's Units of Action. In addition to providing tools to assist in the administrative and reporting requirements of safety program management, TacSafe has built in analysis tools that can provide commanders at all levels with tools to view hazards and hazard trends within the organization. These tools are totally unique and not found in any other safety management resources available in the Army. Several comprehensive analysis tools are planned as part of the Safety Management System. The initial analysis capability consists of a series of detailed analysis reports. Information in these reports is provided in a *drill-down* format that gives progressively detailed views of trends within the organization. These analysis reports categorize trends into their DOTLMPF and quantify associated hazard and hazard precursor trends. Hazard precursors are those conditions that allow the hazards to be present. Additional reports provide views of organizational and leadership actions that cause the hazards. These views provide commanders with answers to why the hazard exists. Through the use of the centralized hazard management and analysis tools, commanders and safety managers can identify the problem, determine its cause, resource the most effective solutions and controls and then track performance. This release of TacSafe contains the following capabilities:

- A unified hazards log that includes hazards identified as part of accident investigations, through inspections, through observations, and through other traditional hazard identification means
- A safety inspection management tool that manages inspection reporting requirements and catalogs identified hazards and deficiencies into the unified hazards log
- An accident reporting tool that integrates with the unified hazards log and catalogs accident information into a single structure for both aviation and ground accidents
- Centralized management of the safety program elements through a single console that provides access to common reporting requirements and a powerful set of analysis reports. These analysis reports are capable of providing safety managers and commanders with comprehensive overviews of safety and hazard trends within their organization.

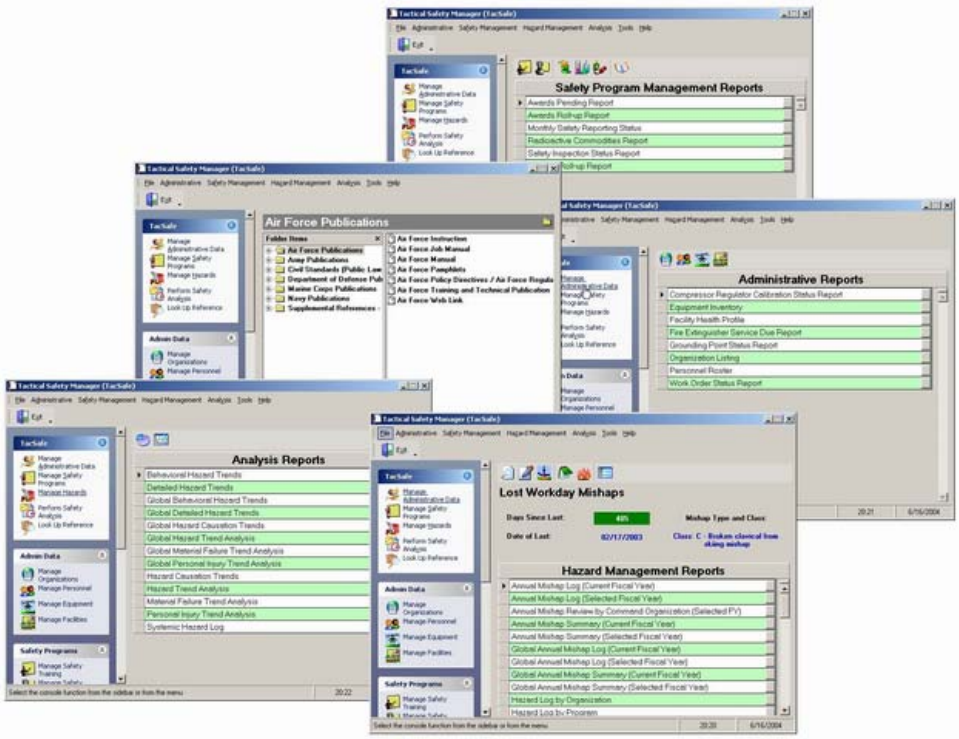

Figure 7 - TacSafe Interface

All of the capabilities are designed to be implemented at all levels of command from company through Eighth US Army. The unique design of the reporting engine gives relevant information regardless of the command level used.

A detailed requirements and development plan has been developed for TacSafe. The end state capabilities of TacSafe are far reaching and comprehensive. The development plan consists of desktop and Web based tools that provide paperless transport of mishap and hazard information from all levels of command to Eighth US Army. The tool would also be able to electronically send mishap information directly to the US Army Combat Readiness Center. Safety training management, safety program management (e.g. respiratory protection program, fire safety program, explosive safety program, etc.), inspection management and tracking, and detailed analysis tools are all part of future releases of TacSafe and the Safety Management System.

Future Releases of the Safety Management System

The upcoming release of the Safety Management System is only a start of what is planned for the project. Eighth US Army has partnered with the US Army Combat Readiness Center to move the project forward and to integrate it with other composite risk management tools and resources. We are also soliciting partnerships with other Major Commands to ensure the project matures to the needs of the total force. Future releases will include:

Software Tools

1. Web based interfaces designed to support installations and commands
2. Commander's TacSafe Console
3. Commander's Facility / Base Ops Console
4. Web based reports and analysis
5. Online accident reporting integrated with ARAS
6. Integrated, mission specific, risk management tools that provide real answers to real mission issues

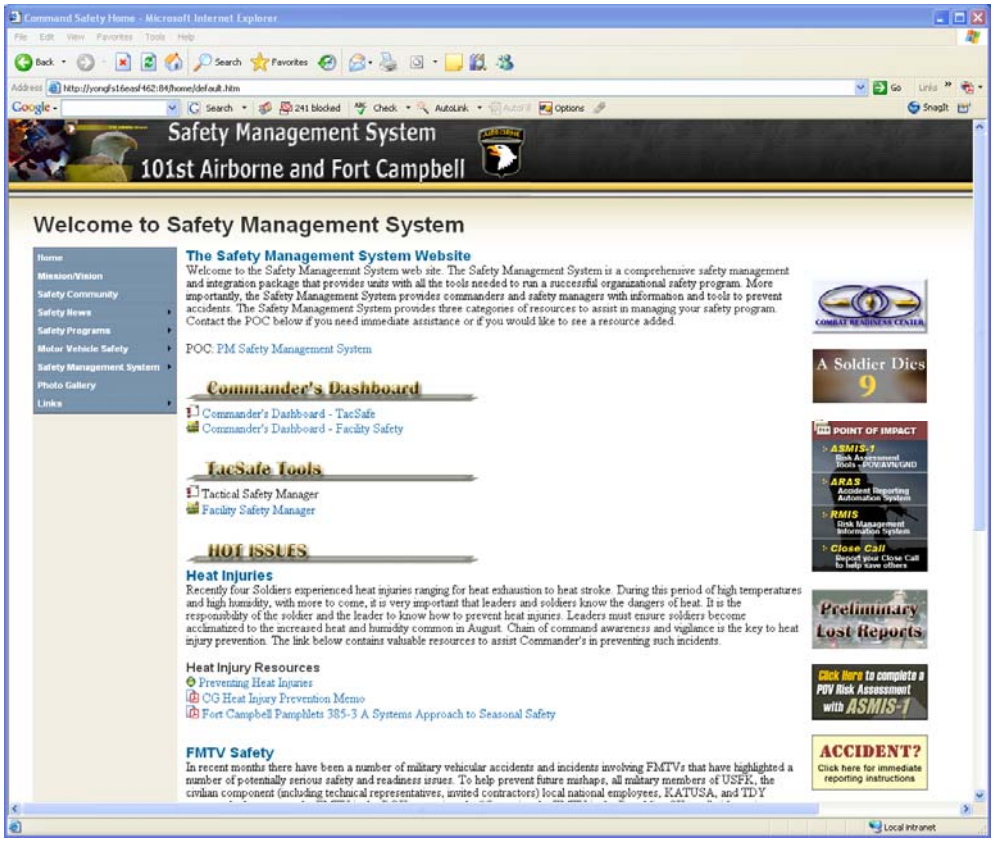

Figure 8 - Web Based Tools

Safety Manager Guides

1. Continuity guides in electronic format providing *"How-to"* resources. Guides will be designed to provide the 90% solution allowing commands to modify the contents based on region or specific command requirements.
2. Safety training management and execution guides. Supplemental guides will be provided with each of standardized training packages defined below.

Safety Management Resources

1. Standardized quality content that will be updated via the internet and through update discs.
2. Standardized training packages that include computer based training, lesson plans, briefing slides, frequently asked question answer guides, and lesson based *"how-to"* training guides.
3. Feedback mechanisms to ensure the right resources are getting to the field.

Conclusion

Commanders in today's Army are focused almost entirely on mission. For a tool to be relevant to a commander, the tool must focus on issues related to a specific mission or task. The general numeric reporting and statistical data stored in ASMIS pays little attention to quantifying those mission specific elements that are needed to make information resources relevant. The current initiative the USACRC is undertaking to link other information repositories should move to improve these issues but much more is necessary. Developing the relevancy of lessons learned is essential to providing commanders with tools that can affect the right kinds of changes and more importantly tools that will be used. As the US Army Combat Readiness Center matures in its role as the premier resource for loss protection it must re-look its accident investigation processes and the development of safety and risk management tools. It must focus on the needs of commanders and look to addressing the specifics of Army missions.

As we transform our Army into a more lethal and leaner force we also run the risk of exposing our soldiers to unforeseen hazards. Proper implementation and integration of the composite risk management process can prevent these unforeseen hazards from turning into unnecessary losses. Our safety programs need to change:

- From compliance based programs to operations oriented composite risk management based programs
- From regulation to leader responsibility
- From failure oriented to achievement oriented
- From outcome (mission) focus to soldier and behavior focus
- From top-down control to bottom-up control
- From rugged individualism to interdependent teamwork
- From piecemeal to a systems approach
- From fault finding to fact finding
- From reactive to proactive
- From quick fix to continuous improvement
- From priority to value

Meeting Secretary Rumsfeld's accident reduction goals are achievable if we place the right tools in the hands of our leaders and safety managers. The task is daunting but with the continued development of the Safety Management System we empower or commanders, our safety managers, and leaders at all levels with the resources and answers to meet this challenge.